County Borough of Blackburn.

# MEDICAL OFFICER OF HEALTH'S

# REPORT,

For the Four Weeks ending Aug. 4th, 1900.

James Wheatley, M.D.,
Medical Officer of Health.

# REPORT.

*To the Chairman and Members of the Health Committee*

GENTLEMEN,

I beg to present the report for the four weeks ending August 4th, 1900.

The number of births registered during this period was 278—Males 129, and Females 149, which is equal to a birth rate of 26·3 per 1000 per annum, compared with 25·0 in the corresponding period of 1899.

The deaths registered during the same period were 167, 87 being males and 80 females. Of these deaths 6 were of persons not belonging to the town who had died in the Workhouse and Infirmary. After making the correction for these, the death rate was equal to 15·2 per 1,000 per annum, compared with 15·0 in the corresponding period of 1899.

There were 16 deaths from the Common Infectious Diseases, viz. :—

| | | |
|---|---|---|
| 2 | from | Measles. |
| 3 | ,, | Whooping Cough |
| 9 | ,, | Scarlet Fever |
| 0 | ,, | Enteric Fever. |
| 2 | ,, | Diphtheria. |

these being equal to a zymotic death-rate of 1·5 per 1,000 per annum.

8 deaths were referred to Diarrhœa, compared with 8 from the same disease in the corresponding period of the previous year; 19 deaths were referred to Acute Lung Diseases, compared with 18 last year; 7 to Tuberculosis, and 2 to Influenza.

193 fresh cases of Infectious Diseases were reported during the four weeks, viz.:—22 Smallpox, 141 Scarlet Fever, 4 Typhoid Fever, 16 Diphtheria, 3 Membranous Croup, 7 Erysipelas.

10 Inquests were reported of which 3 were returned as Accidental Deaths, 6 to Natural Causes, and 1 to Suicide.

25 patients have been admitted to the Fever Hospital, viz.:—23 Scarlet Fever, 1 Typhoid Fever, and 1 other disease; 35 have been discharged and 3 have died. There are 52 patients remaining in the hospital at the present time. The percentage of Scarlet Fever cases removed was 16·3, and of Typhoid Fever 25·0.

| | Birth Rate. | Death Rate. | DEATHS. | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | Measles. | Scarlet Fever. | Whooping Cough. | Smallpox. | Diphtheria. | Diarrhœa. | Lungs Diseases. | Tuberculosis. |
| St. Stephen's... | 27·2 | 15·7 | 1 | 1 | ... | ... | ... | 1 | 1 | ... |
| Trinity ......... | 25·7 | 19·9 | ... | 1 | 1 | ... | ... | 2 | 4 | 2 |
| St. Michael's... | 37·5 | 15·0 | ... | ... | ... | ... | ... | ... | 1 | ... |
| St. John's ...... | 21·2 | 21·2 | ... | 2 | 1 | ... | ... | ... | ... | 1 |
| St. Silas' ...... | 20·7 | 9·6 | ... | 1 | ... | ... | ... | ... | ... | ... |
| St. Paul's ...... | 19·5 | 13·7 | ... | ... | 1 | ... | ... | ... | 1 | ... |
| St. Peter's ...... | 26·7 | 15·4 | ... | 1 | ... | ... | ... | ... | 2 | ... |
| St. Mary's ...... | 17·8 | 26·8 | ... | ... | ... | ... | ... | 2 | ... | ... |
| St. Matthew's.. | 42·2 | 7·7 | ... | ... | ... | ... | ... | 1 | 1 | ... |
| St. Thomas' ... | 25·0 | 13·5 | ... | 1 | ... | ... | ... | ... | 3 | ... |
| Park ........... | 24·3 | 15·3 | ... | 1 | ... | ... | 1 | ... | 1 | 2 |
| St. Luke's ...... | 27·5 | 16·5 | 1 | ... | ... | ... | 1 | 2 | 1 | 1 |
| St. Mark's...... | 27·7 | 17·9 | ... | 1 | ... | ... | ... | ... | 2 | ... |
| St. Andrew's... | 27·7 | 13·1 | ... | ... | ... | ... | ... | ... | 2 | 1 |
| Boro' ......... | 26·3 | 15·2 | 2 | 9 | 3 | | 2 | 8 | 19 | 7 |

## Notified Cases of Infectious Disease.

| | Week ending July 14 | Week ending July 21 | Week ending July 28 | Week ending Aug. 4 | Totals. |
|---|---|---|---|---|---|
| Smallpox | 1 | 12 | 7 | 2 | 22 |
| Scarlet Fever | 36 | 33 | 39 | 33 | 141 |
| Diphtheria | 5 | 5 | 4 | 2 | 16 |
| Membranous Croup | 1 | 1 | | 1 | 3 |
| Typhoid Fever | 2 | 1 | 1 | | 4 |
| Puerperal Fever | | | | | |
| Erysipelas | 5 | | 2 | | 7 |
| TOTALS | 50 | 52 | 53 | 38 | 193 |

**Scarlet Fever.** There has been a further increase in the amount of scarlet fever, and several schools have shown an undue preponderance of cases. I have sent a circular to all the schools advising that the rooms be thoroughly washed with disinfectants during the holidays.

**Measles.** Only 54 cases of measles have been reported from the schools compared with 152 last month and 243 the month before. The epidemic may be considered now to be practically at an end.

## TABLE II.—ANALYSIS OF CASES OF SMALLPOX.

| No. | Age. | Date of Admission. | Date of Illness. | Date of Rash. | Vaccination. | Infection. | Number kept in Quarantine. | Number in contact directly or indirectly who have been Re-vaccinated. |
|---|---|---|---|---|---|---|---|---|
| 1 | 44 | June 25th | June 17th | June 20th | 2 marks $\frac{1}{3}$in. | Not known | 2 | 3 |
| 5 | 37 | July 10th | July 6th | July 8th | 3 marks $\frac{1}{2}$in. | From No. 1. No communication traced: large crack between bedrooms | 2 | 45 |
| 2 | 16 | ,, 16th | June 21st or 23rd | June 25th | 3 good marks $\frac{1}{2}$in. to $\frac{3}{4}$in. in diameter | Not known | 4 | 96 |
| 8 | 21 | ,, 18th | July 11th | July 13th | 4 good marks | From No. 2.—on June 30th | 1 | 1 |
| 9 | 27 | ,, 18th | ,, 12th | ,, 13th | 3 good marks $\frac{1}{2}$in. in diameter | From No. 2.—on July 1st | ... | ... |
| 6 | 14 | ,, 18th | ,, 8th | ,, 9th | 3 good marks $\frac{1}{2}$in. to $\frac{3}{4}$in. in diameter | From No. 2 | 3 | 9 |
| 7 | 11 | ,, 18th | ,, 8th | ,, 11th | 3 fair marks about $\frac{1}{2}$in. in diameter | From No. 2 | ... | 4 |
| 13 | 7 mon. | ,, 18th | ,, 15th | ,, 16th | Vaccinated July 9th, 1900 | From No. 2 | ... | ... |

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| 10 | 18 | July 18th | July 12th | July 14th | 4 good marks | From No. 2—on July 1st | 6 | 20 |
| 14 | 6 | ,, 19th | ,, 16th | ,, 18th | Un-vaccinated | From No. 2 | 3 | 5 |
| 11 | 14 | ,, 19th | ,, 12th | indefinite | 3 good marks $\frac{3}{4}$in. in diameter | From No. 2 | 9 | 9 |
| 12 | 30 | ,, 19th | ,, 14th | ,, 16th | 3 marks almost $\frac{3}{4}$in. in diameter | From No. 2—on July 2nd | 1 | 4 |
| 15 | 38 | ,, 19th | ,, 16th | ,, 18th | Said to have been vaccinated as a baby, can see no marks. Patient has never seen any | From No. 2—on July 4th | 1 | 4 |
| 17 | 33 | ,, 20th | ,, 19th | ,, 22nd | 2 rather indistinct marks $\frac{1}{2}$in. in diameter | From No. 2 | ... | ... |
| 16 | 18 | ,, 25th | ,, 17th | ,, 19th | 1 faint mark | Probably from No. 2 | 4 | 11 |
| 21 | 19 | ,, 25th | ,, 23rd | ,, 25th | 1 good mark $\frac{3}{4}$in. in diameter | From No. 3—on July 11th | ... | 4 |
| 19 | 47 | ,, 25th | Indefinite | ,, 22nd | 2 fairly distinct marks | From No. 4 | 5 | 26 |
| 20 | 19 | ,, 25th | July 19th | ,, 22nd or 23rd | 3 very large marks | From No. 4 | ... | 6 |

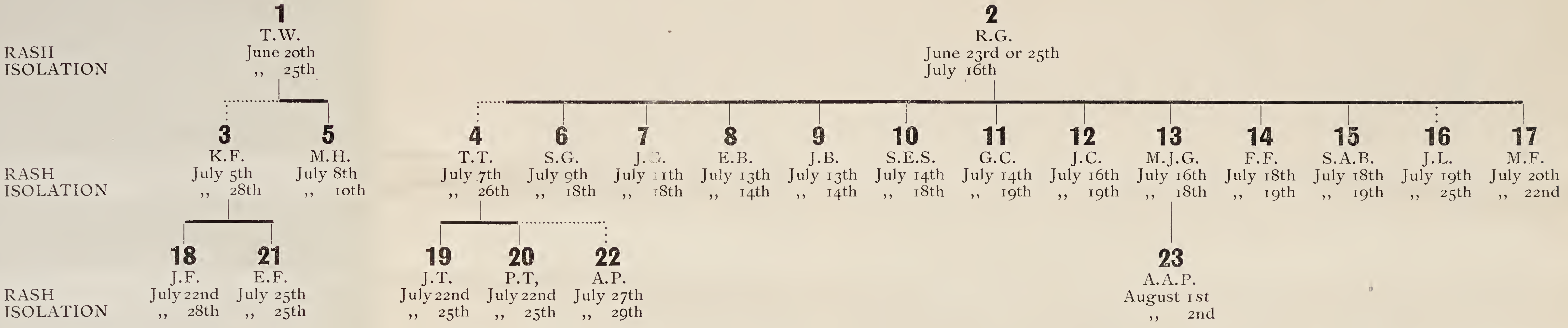
## ANALYSIS OF CASES OF SMALLPOX.—*Continued.*

| No. | Age. | Date of Admission. | Date of Illness. | Date of Rash. | Vaccination. | Infection. | Number kept in Quarantine. | Number in contact directly or indirectly who have been Re-vaccinated. |
|---|---|---|---|---|---|---|---|---|
| 4 | 17 | July 26th | July 5th | Did not notice | 2 large marks $\frac{3}{4}$in. in diameter | Probably from No. 2 | ... | 29 |
| 3 | 20 | ,, 28th | ,, 3rd | July 5th | 2 indistinct marks $\frac{1}{3}$in. in diameter | Probably from No. 1 | ... | 4 |
| 18 | 26 | ,, 28th | ,, 21st | ,, 22nd | 1 big mark $\frac{3}{4}$in. in diameter | From No. 3 | ... | ... |
| 22 | 24 | ,, 29th | ,, 25th | ,, 27th | 2 rather faint marks | Possibly from No. 4 | 3 | 3 |
| 23 | 40 | Aug. 2nd | ,, 30th | Aug. 1st | 2 small faint marks about $\frac{1}{3}$in. in diamenter; re-vaccinated July 24th, 2 marks both taken well | From No. 14—on July 19th | 7 | 31 |

The cases are arranged in order of their admission to the hospital.
None of the patients had been re-vaccinated before being infected.

# SMALLPOX CASES.

TABLE I. SHOWING HOW THE CASES HAVE ARISEN.



The first date in each case indicates the date of rash.
The second date in each case indicates the date of isolation.
A dotted line indicates that infection has not been traced with absolute certainty.

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# SMALLPOX.

In my last month's report I gave a history of the one case of smallpox which had come under my notice. It was hoped, as fourteen days had elapsed and no further cases had been discovered, that there would be no extension.

Unfortunately there were at that time several mild cases in the town quite unknown to us, and the result has been a small but sharp outbreak of smallpox. The two tables contained in this report will explain most of the facts connected with this outbreak. My first opinion with regard to its origin was that case (1) was infected on Whit Monday, whilst travelling to Preston, or whilst in that town. The subsequent cases have caused me to alter my opinion. By referring to table 2, it will be seen that case No. 1 commenced on June 17th and No. 2 on June 21st or 23rd. As it takes 12 days for smallpox to develop, it is evident that No. 2 was not infected from No. 1. No. 2 had not been out of the town and therefore must have come in contact with someone or something infectious in the town and this at a date previous to the illness of No. 1. The most likely explanation is that there has been a case of smallpox in the town unknown to us before either of these.

**Overlooked Cases.** The next matter I wish to draw your attention to are the cases which have been overlooked for a fortnight or longer. It is from these cases only that an epidemic of smallpox is to be feared. If cases come to our knowledge within a reasonable time, the spread of the disease can be checked with absolute certainty. But if, on the other hand, some are overlooked, the disease must almost of necessity spread. By referring to table 2, it will be seen that cases 2, 3, and 4 were not discoverd until periods varying from 21 to 25 days had elapsed. The tables show also that these three cases account for almost the whole of the spread of the disease. They have been discovered by tracing back the movements of other cases which have come to our knowledge.

Case No. 2, which was directly responsible for 12 subsequent cases and probably indirectly responsible for five more, was discovered by investigating the origin of Nos. 8 and 9. No. 2 had, when discovered, been ill for about 23 days. He had been kept indoors for about 12 days, after which time he wandered pretty freely in the neighbourhood, and after about 20 days he went to another part of the town. He gave smallpox to three of the inmates of this household out of six. He was visited whilst indoors by about 16 persons, of whom, 8 took smallpox. He afterwards came in contact with over 100 people, but it seems probable that, when in contact with the majority of these, he was not in an infectious state. Only one case can be attributed to him after leaving the house. The whole of these people have been kept under strict daily supervision, and 96 of those who had been in more or less direct contact were re-vaccinated.

Case No. 3 was not discovered until after the notification of No. 21. On enquiring into this latter case, it was found that she had on the day on which she was probably infected, visited a certain house where there had been illness. On visiting this house I found two exceedingly mild cases of smallpox, one of which had commenced 25 days before. Fortunately, this person (case No. 3) had not been in contact with many people, but those with whom she had been in contact were kept under supervision and as many as possible vaccinated.

Case No. 4 came under my notice in the following manner. A case of smallpox was notified at this house. On questioning the rest of the family it was found that one of the sons had been ill with what was undoubtedly smallpox. The onset of both these cases was on the same day, which practically proved that they had been infected from the same source. A very careful examination was then made of the whole family with the result that evidence was found sufficient to show that another son had suffered from smallpox (case 4). His illness had commenced 21 days before. After a day or two he had gone out of doors regularly, and after 10 days he had returned to his work. A list of all the persons he had been in contact with, was obtained. Twenty nine of these were vaccinated, and the whole have been kept under supervision.

I have described these cases in some detail because they show the difficulties that we have had to contend with, and the great danger there has been of an epidemic. One reason why so few cases have arisen from them is no doubt that two out of the three cases were extremely mild, and the amount of infectious matter given off must have been very small. Another reason is that the majority of people are to a considerable extent protected by vaccination.

**Infection.** The source of infection in the different cases is shown clearly in the two tables. Where the lines connecting two cases is uninterrupted the infection was absolutely proved, but where a dotted line connects two cases there is only a strong probability. Perhaps the most interesting are cases No. 3 and 4. In tracing these it was necessary to go back to a period, five weeks before the enquiry was made, as the cases had been overlooked for three weeks, and the disease takes a fortnight to develop. Case No. 4 went to a place of amusement in the town on June 23rd, exactly twelve days before the onset. Case No. 2 was at the same place, on the same night, and sat in close proximity. They do not remember seeing each other, but these facts have been verified. No. 3 seems to have been infected by a third person who was not ill himself. A person living in the same house as No. 1 visited a certain shop on the same day as No. 3. On the twelfth day afterwards No. 3 commenced to be ill. These matters are not simply curious but are of considerable importance, for if no connection can be shown between the different cases they have probably been caused by others which have been overlooked, and which at any time may cause a further outbreak. If on the other hand, every case can be shown to have arisen from a known case there is much greater probability that the outbreak is well in hand. Case No. 2 throws some light on the most infective period of smallpox. This boy came in contact pretty freely with other persons through the whole course of his illness. On the third day of the rash two persons were infected; 6th day, two persons; 7th day, two persons; 8th day, one person; 9th day, one person; 10th day, two persons; 11th day, one person; 13th day, one person; after the 13th day, although he came in contact with an increasing number of people none were infected.

**Vaccination.** It will be noticed on referring to Table II. that no vaccinated child under 11 years took smallpox, although a large number were exposed to infection. This must be considered a proof of the efficacy of vaccination when it is borne in mind that smallpox in pre-vaccination times was a disease specially affecting children.

Of the 23 cases, 21 showed evidence of vaccination; the other two—a boy of six years, and a woman of 38 years, showed no evidence. The boy had smallpox in a rather severe form but not confluent; the woman had confluent smallpox, and died. The other fatal case was a man, 47 years old, who showed two fairly distinct vaccination marks.

As regards primary vaccination the lessons to be learnt are :—(1) that the effect passes off in course of time and that the less thoroughly the vaccination is done in infancy the sooner will the effect pass off. (2)—that infantile vaccination prevents smallpox in childhood, modifies it very much in youth or early middle age, but that it will not prevent a fatal attack of smallpox in later life. None of the cases had been re-vaccinated before exposure. As regards re-vaccination after exposure to infection I have more definite data. Over 200 persons who were supposed to have been exposed to infection were re-vaccinated. In no case where they were vaccinated within 4 days of exposure did smallpox follow. Two persons developed smallpox after having been vaccinated, but in one case the vaccination was not performed until 5 days after exposure, and in the other not until 7 days after exposure. In both these cases the disease was much modified.

**Prevention.** With regard to the means taken to prevent the disease, I have relied upon the same measures that have been successful in previous outbreaks. The cases have been removed to the hospital immediately they have been discovered. All the persons in the same house have been kept it quarantine for 14 days. The house and everything contained in it have been thoroughly disinfected. The names of the persons who have been in contact with the cases directly or indirectly have been obtained, and they have been visited daily from the 10th to the 16th day after exposure. Re-vaccination of persons who have been in contact has been done in the large majority of cases. Also re-vaccination of persons in the immediate neighbourhood of any outbreak has been carried out to very considerable extent. In order that this should be done more efficiently I wrote to the Board of Guardians advising that assistance should be given to the Vaccination Officer. The Board has appointed four assistants.

On finding that the outbreak was assuming somewhat serious proportions I considered that extensive house to house visitation for the purpose of finding cases of smallpox as early as possible was necessary. I reported this to you at a meeting on July 27th, and it was left in the hands of the Chairman, Vice-Chairman, and myself, to appoint whatever extra help it was thought necessary.

Four temporary Inspectors were appointed and they commenced their work on July 30th. The necessity for frequent inspection is shown by the fact that out of the 22 cases coming to our knowledge this month, only seven were notified by medical men, the remainder being discovered by myself and staff.

On July 31st, I wrote to the Board of Guardians recommending that the inmates of the Workhouse should be re-vaccinated. This suggestion has not I believe, been acted upon, and if there is no further extension of the disease, it may not be necessary. Re-vaccination of the inmates of the Workhouse, if done at the beginning of the 1893 epidemic, would have saved much trouble and expense and probably some lives.

It is pleasing to be able to report that the hospital was ready in every way for the reception of patients, and that the excellent water supply recently provided has proved a great boon.

## Report of Veterinary and Chief Meat Inspector.

*To the Medical Officer of Health.*

Sir,

I beg to submit to you my report for the four weeks ending August 4th, 1900:—

### I. ANIMALS SLAUGHTERED AT THE ABATTOIRS.

| Beasts. | Sheep. | Calves. | Pigs. |
|---|---|---|---|
| 505 | 2799 | 95 | 226 |

## II. NUMBER OF CARCASES AND AMOUNT OF DEAD MEAT BROUGHT TO THE ABATTOIRS.

| Carcases. | | Hind Quarters. |
|---|---|---|
| Beef. | Mutton. | Beef. |
| 32 | — | 22 |

## III. DISEASED CARCASES AND MEAT CONDEMNED, AND DESTROYED.

Nineteen tubercular carcases of beef including 15 cows, and 4 heifers were examined and 3½ of them were rejected and destroyed. The udder of one of the cows was tubercular and weighed 45lbs. An Anthrax affected carcase was brought to the abattoirs on July 9th. The carcase was destroyed, the slaughtering compartment disinfected, and the county police informed. A tubercular carcase of pork was also condemned and destroyed. A regretable waste of food occurred during the recent hot weather owing to the rapidity with which meat became putrid

| Carcases. | | | | |
|---|---|---|---|---|
| Beef. | Mutton. | Veal. | Pork. | Meat. |
| 3½ Tubercular<br>1 Anthrax<br>1 Anasarca<br>1 Bronchitis & Emaciation<br>1 Diseased Liver, etc. | 2 Putrid | 1 Putrid<br>1 Ill Bled | 1 Tubercular | Bruised, Putrid, and Unmarketable Meat. 1042 lbs. |
| Total 7½ | 2 | 2 | 1 | 1042 lbs. |

## IV. TUBERCULAR ORGANS CONDEMNED AND DESTRORYED.

| Lungs | Livers | Stomach | Spleens | Diaphragm | Head |
|---|---|---|---|---|---|
| 11 Sets | 4 | 1 | 3 | 1 | 1 |

## V. ORGANS CONDEMNED AND DESTROYED FOR DISEASES OTHER THAN TUBERCULOSIS.

| Lungs. | Livers. | Stomach. | Kidneys. | Spleen. |
|---|---|---|---|---|
| 3 Sets | 4 | 1 | 3 | 1 |

| Hearts. | Diaphragm. | Udder. |
|---|---|---|
| 2 | 1 | 1 |

## VI. SEIZURES.

On July 16th I entered a butcher's shop in Park Road and seized 4lbs of putrid meat, which I carried before the Justices who ordered it to be destroyed.

On July 17th, Sanitary Inspector Nicholls seized 4lbs of putrid meat in a shop in Havelock Street, and carried it before a Justice who ordered it to be destroyed.

No further proceedings were taken in either of the above cases.

## VII. FISH CONDEMNED AND DESTROYED.

| Boxes. | Barrels. | Kits. | Lbs. of Fish. |
|---|---|---|---|
| 7 Mackerel<br>2 Gurnets | ½ Skate<br>½ Conger eels | ½ Flukes | 42 Lbs of Haddocks |
| Total 9 | 1 | ½ | 42 Lbs |

## VIII. VISITS.

| | |
|---|---|
| To Butchers' Shops | 414 |
| To Private Slaughter Houses | 104 |
| To the Meat Market | 34 |
| To the Fish Market | 22 |
| Total | 574 Visits. |

## IX. VETERINARY INSPECTIONS.

### OUTBREAKS OF SWINE FEVER.

On July 13th, I visited premises at 29, Haslingden Road, and examined 30 pigs. I found two of them suffering from Swine Fever. I also made a P.M. examination of two pigs which had died that day. I immediately notified the Secretary of the Board of Agriculture and the Local Authority that Swine Fever existed at the above named place. I also issued a Declaration that the stys, etc., at the above address were a Swine Fever infected place. On July 17th, in premises adjoining those in which the first outbreak occurred I examined 5 pigs and found three of them suffering from Swine Fever. I notified the Secretary of the Board of Agriculture and the Local Authority. This sty was also declared a Swine Fever infected place. An Inspector of the Board of Agriculture inspected the pigs on July 17th, and on July 19th, another Inspector arrived but by that date 12 pigs had died of the disease. He ordered 12 of the remaining pigs to be destroyed. Having received information that a few days previous to the outbreak, swine had been removed from stys at 29, Haslingden Road, to an adjoining field and also to two farms, all situated in the Borough ; I sent Notices to the occupiers of the farms and field, prohibiting the removal of swine on to, or out of, their premises. On July 31st, I visited 29, Haslingden Road, and found two pigs suffering from Swine Fever, I immediately informed the Secretary of the Board of Agriculture by telegram, and an Inspector arrived the same day and caused ten pigs to be destroyed. The total number of pigs on the infected premises, at the date of the outbreak, was 38, of which 12 died of Swine Fever, 22 were destroyed, and four healthy pigs were slaughtered at the Abattoirs and their carcases passed. During the outbreak I had occasion to visit the infected places 25 times.

I am, Sir,
Your obedient servant,
J. M. STIRLING.

AUGUST 4TH, 1900.

The cow with the tubercular udder had been a milk cow, and although no positive history could be obtained, it had probably been milked as long as possible. It was supposed to have come from a farm at Edgerton, near Bolton. Notice of this, along with the other cases, has been sent to the Medical Officer of Health to the Lancashire County Council.

I am,

Yours sincerely,

JAMES WHEATLEY.

## Meteorological Report for July, 1900.*

The amount of bright sunshine during July was 180 hours 5 minutes, or an average of 5 hours 48 minutes per day. During July, 1899, there were 161 hours 55 minutes bright sunshine. There were two days with no bright sunshine, July the 9th and 22nd, The maximum amount of bright sunshine was on July 11th, 13 hours 45 minutes, compared with the maximum on July 17th and 30th, 1899, of 10 hours 45 minutes.

The total rainfall was 2·30 in. compared with 2·15 in. last year. There were 14 days with no rain.

Humidity of the air varied from saturation on the 22nd to 56·5 % on the 7th.

| | Temperature of earth at | |
|---|---|---|
| | 1 ft. deep. | 4 ft. deep. |
| July 1st.—1900 | 56·5° | 53·5° |
| 1899 | 57‘5° | 54·5° |
| ,, 30th.—1900 | 60·5° | 57·2° |
| 1899 | 61·8° | 57·2° |

* July 1900 the four foot earth thermometer registered 57·2° for the last four days of the month.

July 1899, the four foot earth thermometer registered 57·2° for the last nine days of the month.

### EXTREMES.

| | | | |
|---|---|---|---|
| Highest corrected reading of Barometer | 30·285 | on | 8th. |
| Lowest ,, ,, ,, ... | 29·547 | ,, | 1st. |
| Highest temperature in the shade ... | 80·5 | ,, | 11th. |
| Lowest ,, ,, ... | 42·5 | ,, | 7th. |
| Highest sun temperature—black bulb... | 130·5 | ,, | 25th. |
| ,, ,, ,, —bright bulb... | 95·0 | ,, | 11th. |
| Lowest on grass ... ... ... ... ... | 36·0 | ,, | 7th. |

### WIND.

| N., | N.E., | E., | S.E., | S., | S.W., | W., | N.W., | CALM |
|---|---|---|---|---|---|---|---|---|
| 1 | 0 | 1 | 1 | 2 | 7 | 17 | 2 | 0 |

Average distance per day 144 miles.

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